JBR

RESEARCH COMMENTARY

Entry and Performance in Financial Markets

By Michael L. Marlow
Associate Professor of Economics
Department of Economics
George Washington University
Washington, D.C.

I. INTRODUCTION

One determinant of market performance is the ability of new firms to enter markets. It is generally argued that the fewer the restrictions on entry, *ceteris paribus*, the more competitive a market will tend to be.[1] Entry in the commercial banking market is restricted on at least two levels. One is that new entrants are required to obtain charters from either the Comptroller of the Currency or the state banking authority. The other is that the ability of a bank to branch is constrained by the branching laws of the state. Before one may recommend solutions to problems of performance in the commercial banking industry, an analysis of the effect from these barriers to entry on performance must be performed. Further than this, it is necessary to know if there exist different impacts from these two levels of entry barriers before specific solutions to policy problems may be made.

This paper provides a test of the hypothesis that increased market entry into the commercial banking industry, *ceteris paribus*, will improve the performance of the industry. Performance is measured as the size of the differential between interest rates charged on loans between geographical areas, after controlling for differences in growth, borrower risk, and term to maturity characteristics. Tests are also made to determine whether or not it makes a difference if entry is by new firms or by new branches of existing firms. The results of these tests provide us with implications for reform of the entry restrictions on financial firms.

II. PREVIOUS RESEARCH AND THE DATA SET

Research on the competitive characteristics of banking markets generally estimate the effects of the number of firms and deposit concentration ratios on interest rates for loans. Kaufman (1966), Aspinwall (1970), and Davis and Verbrugge (1978) find the number of firms to be a significant and negative determinant of interest rate differentials between areas. Edwards (1964), Aspinwall (1970), and Davis and Verbrugge (1978) conclude that concentration ratios are a significant and positive determinant of interest rate differentials between areas. Rhoades (1980) concludes that new entry by firms does not exert a significant impact upon the mobility and turnover of the top five firms in 184 banking markets.

Three problems associated with previous research are addressed here. First, entry is only addressed in Rhoades (1980). All other studies regress the actual number of firms on interest rates and not the change in the number of firms over the previous years. While Rhoades (1980) considers the entry of firms as an independent variable, the dependent variable of the regression equation is not an interest rate. Rather, mobility and turnover

[1] For example, see Bain (1965).

JBR

RESEARCH COMMENTARY

characteristics of firms are the dependent variables used as proxies for competition in the banking industry. The present study uses an interest rate as the dependent variable since it is clearly a form of price competition, while mobility and turnover are more the result of competition rather than a type of competition. Possibly, the reason why Rhoades (1980) does not find a significant relationship between entry and competition is due to this specification of competition.

A second problem is that markets are defined as only one form of financial firm. With the exception of Davis and Verbrugge (1978), which considers savings and loan associations, all the studies restrict the market only to commercial banks. Since very few banks are virtual monopolists in their geographical areas, one need consider a wider definition of a market that includes all kinds of firms which are active participants. Therefore, previous studies may have misspecified their models of competition in banking markets. This paper considers the home mortgage market of 1975 in 39 Standard Metropolitan Statistical Areas (SMSAs).[2] The choice of the 39 SMSAs is constrained by the unavailability of data on mutual savings banks which made it necessary to consider only those SMSAs without mutual savings banks. In addition, SMSAs that are located in unit-banking states are not included in this sample because branching is prohibited by law. The exclusion of SMSAs with unit-banking laws allows for comparison of only those areas where entry is of two types: *De novo* and branching. The use of this sample allows for a test of a market where both commercial banks and savings and loan associations are participants, and it provides for a clearer analysis of performance than previous studies which only consider one kind of financial firm.

A third problem concerns the definition of the number of rivals: The number of main offices or the number of branches. Aspinwall (1970), Davis and Verbrugge (1978) and Rhoades (1980) use the former measure based on the argument that an increase in the number of branches is a form of nonprice competition. Longbrake and Peterson (1979) use the number of different institutions in a market, which includes market deposits of branch offices of institutions headquartered outside the market. It is argued that branching does not serve to increase price competition because all the branches of a firm offer the same prices. In this case, branching is viewed as nonprice competition in the form of convenience to customers and may end up exerting a positive impact on prices due to its being a cost of production.[3] Thus, the number of branches, *ceteris paribus,* may exert a positive impact upon prices.

While this argument appears reasonable, another possibility comes to mind. Since branching adds to the sheer number of competitors of rival firms, branching may serve to lower interest rates, *ceteris paribus,* as displayed in the competitive market model of economics. Since the transaction between the borrower and lender of mortgage funds is usually a one-time transaction, convenience in the form of branches has little to do with mortgage interest rates. Even if branching was for the convenience of customers, new banks which decide not to branch could enter markets where the existing firms did operate branches and underprice their competitors. In this case, the long-run competitive situation would be characterized by branching if it serves as a means of decreasing production costs and interest rates. This is the economies-of-scale argument. Thus, the number of branches, *ceteris paribus,* may exert a negative impact upon prices. Since there are conflicting ideas on the specification of this variable, this issue becomes an empirical question.

III. MODELS AND TESTS

The following reduced-form equation of interest rate determination is estimated.[4]

$$R = r(P, LV, TM, MS, E_i) \qquad (1)$$

where

- R = effective interest rate on home mortgages
- P = percentage change in population from 1974 to 1975
- LV = loan-to-value ratio
- TM = term to maturity
- MS = firms per population at beginning of the period of analysis
- E_i = entry variables
- E_1 = percentage change in the number of main offices of commercial banks and savings and loan associations for various years
- E_2 = percentage change in the number of branches of commercial banks and savings and loan associations for various years.

[2] The data set is from Federal Home Loan Bank Board (1979). This set consists of a survey of all qualifying loans in 1975 for single-family, nonfarm, conventional mortgages closed during the first five working days of the month. The sample used here includes commercial banks, savings and loan associations, and mortgage bankers, and the data are calculated as annual averages for all reported loans by SMSA.

[3] It could also be argued that there exist certain economies of scale which result from branching and serve to lower interest rates. Gilbert and Longbrake (1974) present a detailed evaluation of the effects of branching on the productive efficiency of financial institutions. Evidence is presented for the conclusion that organizational structure does influence the cost of producing various services but that no one form of structure is superior overall. For example, in the case of real estate loans, the above study finds that there exist lower costs in branch offices versus production in the main office. On the other hand, Longbrake and Peterson (1979) find that market structure and organizational structure variables do not exert significant impacts upon regional mortgage rate differentials. While this issue of economies of scale in banking is unsettled in the literature, it is argued here that the sample is restricted to only non-unit-banking areas and that firms enjoy similar economies of scale. In other words, this economies of scale issue would be more relevant if the data consisted of SMSAs with both branching and nonbranching laws.

[4] Number of commercial banks and savings and loan associations are obtained from *Summary of Accounts and Deposits* (1968-1975) and *Summary of Savings Accounts by Geographical Area* (1968-1975), respectively. Population data are from *Statistical Abstract of the United States* (1974 and 1975). All other data are from the Federal Home Loan Bank Board (1979).

Figure 1. Regression Estimates of the Mortgage Interest Rate Equation.

Constant	Growth in Population *P*	Loan-to-Value *LV*	Term-to-Maturity *TM*	Market Structure *MS*	Time Period for Market Structure Variable	Entry E_1	Entry E_2	Time Period for Entry Variable	R^2/SE
8.96*	3.07**	−.01	.03**	−.15	1972	−.14**		1972-1975	.3400
(16.36)	(1.89)	(.62)	(1.89)	(.18)		(2.23)			.1659
9.06*	2.88**	−.01	.03**	−.03	1972		−.04*	1972-1975	.4513
(18.11)	(1.96)	(.68)	(1.71)	(.04)			(3.56)		.1512
8.98*	3.38**	−.01	.03**	−.24	1970	−.15**		1970-1975	.3605
(16.69)	(2.10)	(.61)	(1.82)	(.30)		(2.49)			.1633
9.08*	2.99**	−.01	.02**	−.05	1970		−.04*	1970-1975	.4642
(18.39)	(2.06)	(.68)	(1.66)	(.07)			(3.71)		.1495
8.95*	3.57**	−.01	.03**	−.40	1968	−.14**		1968-1975	.3567
(16.95)	(2.20)	(.51)	(1.73)	(.52)		(2.49)			.1638
9.09*	3.12**	−.01	.02**	−.28	1968		−.04*	1968-1975	.4657
(18.41)	(2.17)	(.59)	(1.58)	(.41)			(3.79)		.1490

*Denotes significance at 99% level
**Denotes significance at 95% level
t-statistics in parentheses

The dependent variable R is calculated as an effective rate using the Federal Home Loan Bank Board's procedure of amortizing initial fees and charges over a 10-year period. The variable P is used to measure the impact of population growth on mortgage interest rates. This is a proxy for specifying certain characteristics of the demand for housing. It is expected that, with all else remaining the same, there exists a positive relationship between population growth and mortgage interest rates. Interest rates vary with the type, maturity and risk characteristics of loans. Therefore, part of the variation in regional interest rates may result from differences in the economic characteristics of loans rather than from differences in housing demand or market structure. Two variables are selected to control for mortgage lending risk: Loan-to-value and term-to-maturity variables.

Since the loan-to-value ratio is a measure of risk to firms, higher levels of *LV, ceteris paribus,* are expected to affect mortgage rates positively. This relationship has been shown in Schaaf (1966) and Ostas (1977). The expected sign of the term-to-maturity variable is uncertain. On the one hand, the longer the term, the slower that mortgage owners earn equity, and therefore the higher the risk for mortgage lenders. On the other hand, the longer the term, the lower the risk for mortgage lenders since this produces lower monthly payments. Since there exists no *a priori* reasoning to choose one explanation over the other, the expected sign is ambiguous. The empirical evidence on the sign of *TM* is mixed. For example, Jackson and Kaserman (1980) find a positive relationship between default risk on home mortgages and term-to-maturity while Barth, Cordes and Yezer (1979) find a negative relationship.

The model is incomplete without including some form of market structure variable that reflects the monopoly power of existing institutions and which would, in turn, influence the ability of new entrants to affect prices. Market structure could itself change as new banks entered the market or as growth rates differed among different-sized institutions already in the market. Therefore, a market structure variable at the beginning of the period of analysis may be most appropriate. The number of commercial banks and savings and loan associations per population at the beginning of the period of analysis is chosen to measure market structure.[5] Higher levels of *MS* should be negatively related to mortgage rates. The entry variable E_1 is expected to exert negative impacts upon mortgage interest rates, while the expected sign of E_2 remains an empirical question. The time periods 1968-1975, 1970-1975 and 1972-1975 are used to measure the rate of entry.

Figure 1 displays the ordinary least squares estimates for the reduced-form equation in (1). The population growth variable P always exerts a positive im-

[5] The variable *MS* was also specified as the number of offices of firms per population. Since the results of the analysis did not change, only those equations estimated with the numbers of firms are shown.

JBR

RESEARCH COMMENTARY

pact upon mortgage rates and is significantly different from zero. The loan-to-value variable LV always exerts a negative impact upon mortgage rates but is not significantly different from zero. The coefficients on the term-to-maturity variable *TM* are always positive and significantly different from zero.

The coefficients on the market structure variable *MS* are always negative but never significantly different from zero. This suggests that the market structure that existed at the beginning period of analysis is not an important determinant of interest rate differentials. While this result is unexpected, it should be noted that the *MS* variable is included in the equation to control for the ability of new entrants to affect interest rates.[6]

The entry variable E_1 and branching variable E_2 always exert a negative and statistically significant impact upon mortgage rates. These results suggest that, at least since 1968, entry exerts a competitive effect on mortgage interest rates. Since increased branching also results in lower interest rates, this may be evidence of economies of scale in banking. However, since E_2 may also include *de novo* branch entry of institutions outside the market, the pure scale economy impact may be blurred.

[6] Longbrake and Peterson (1979) find that existing market structure is not significant in explaining regional mortgage rate differentials and suggest that improvement in secondary markets be a policy objective.

IV. CONCLUSIONS

Within the framework of the mortgage market, this paper provides two interesting conclusions about industry performance. First, it indicates that, with all else remaining the same, increased entry by firms serves to lower interest rates charged to customers. Second, it is shown that both increases in the numbers of new firms and added branching results in lower mortgage interest rates. This suggests that branching is not a form of nonprice competition but rather may generate economies of scale in banking.

One obvious implication suggested by the study is that relaxation of both chartering and branching restrictions will serve to enhance the performance of firms in the mortgage market. However, the estimates of the model of interest rate determination are only directly applicable to areas where branching already exists. The effects of entry in mortgage markets in unit banking states would be a useful follow-up to this study. □

I am indebted to James R. Barth, Robert S. Goldfarb and an anonymous referee for valuable comments.

REFERENCES

Aspinwall, Richard C., "Market Structure and Commercial Bank Mortgage Interest Rates," *Southern Economic Journal* (April 1970) pp. 376-384.

Bain, Joe S., *Barriers to New Competition*, Cambridge, Mass.: Harvard University Press (1965).

Barth, James R., Joseph J. Cordes and Anthony M. Yezer, "Financial Institution Regulations, Redlining and Mortgage Markets," in *The Regulation of Financial Institutions*, Federal Reserve Bank of Boston (October 1979) pp. 101-143.

Davis, Harry M. and James A. Verbrugge, "Structure and Performance in the Savings and Loan Industry," *Journal of Economics and Business* (Fall 1978) pp. 40-51.

Edwards, Franklin R., "Concentration in Banking and Its Effect on Business Loan Rates," *Review of Economics and Statistics* (August 1974) pp. 294-300.

Federal Home Loan Bank Board, "Metropolitan Area Mortgage Rates and Terms, 1967-1978," Office of Economic Research (1979).

Gilbert, Gary G. and William A. Longbrake, "The Effects of Branching by Financial Institutions on Competition, Productive Efficiency and Stability: An Examination of the Evidence," *Journal of Bank Research* (Winter 1974) pp. 298-307.

Kaufman, George G., "Bank Market Structure and Performance: The Evidence from Iowa," *Southern Economic Journal* (January 1966) pp. 429-439.

Jackson, Jerry R. and David L. Kaserman, "Default Risk on Home Mortgage Loans: A Test of Competing Hypotheses," *Journal of Risk and Insurance* (December 1980) pp. 678-690.

Longbrake, William A. and Manfred O. Peterson, "Regional and Intra-Regional Variations in Mortgage Loan Rates," *Journal of Economics and Business* (Winter 1978) pp. 75-83.

Ostas, James R., "Regional Differences in Mortgage Financing Costs: A Reexamination," *Journal of Finance* (December 1977) pp. 1774-1778.

Rhoades, Stephen A., "Entry and Competition in Banking," *Journal of Banking and Finance* (June 1980) pp. 143-150.

Schaaf, A. H., "Regional Differences in Mortgage Financing Costs," *Journal of Finance* (March 1966) pp. 85-94.

Statistical Abstract of the United States, U.S. Department of Commerce (1974 and 1975).

Summary of Accounts and Deposits, Federal Deposit Insurance Corporation (1968-1975).

Summary of Savings Accounts by Geographic Area; Federal Home Loan Bank Board (1968-1975).